

**REMARKS**

In this Amendment, claims 1, 19-26, and 32 are canceled, claims 2-10 and 17 are amended, and claims 33-41 are new. After entry of this Amendment, claims 2-10, 17-18, 33-41 are under examination.

Independent claim 1 has been canceled and replaced with independent claim 33. Independent claim 33 is supported by the original claims, as well as at page 6, lines 17-28, “defining high stringency conditions,” and page 2, lines 1-20.

Claim 2-10 and 17 have been amended for clarity, and to correct dependency from new claim 33 where needed. The amendments to claims 2-9 and 17 are not narrowing.

Further, the limitation “a maximal fluorescence emission in the range of 400-630 nm,” has been deleted from claim 2, and is the basis for new claim 36.

New claims 34 and 35 are supported by the specification at, for example, page 1, lines 23-24, and the Abstract.

New claims 37-39 are supported by the specification at, for example, page 3, lines 16-24.

New claim 40 is supported by the specification at, for example, page 4, lines 18-19.

New claim 41 is supported by the specification at, for example, original claim 19.

No new matter has been introduced, and entry of the Amendment is respectfully requested.

**Response to Objections to the Drawings**

Initially, it is noted that the Examiner’s objection to the Drawings is ambiguous. The Office Action states that the Drawings are objected to because “Figure 2, for example, is blurred, thus, the lanes are difficult to determine.”

As only Figure 2 pictures lanes of any kind, it is unclear whether the Examiner is only objecting to Figure 2, or objecting to Figure 2 and any other Figure that might appear blurred to the Examiner, or all Figures although specific problems that need correction are not being indicated.

MPEP §608.02(b) instructs that the Examiner should state why the Drawings are not acceptable.

Attached to this Amendment are replacement Drawings for Figures 2, 7 and 8, for which the original figures may be of insufficient quality. With regard to the remainder of the Drawings, as stated, it is not clear if and/or why these are objected to. If the Examiner objects to other Drawings, the Examiner is kindly requested to indicate exactly which Drawings are objected to, and exactly what deficiency should be corrected.

It is believed that the Examiner's objections to the Drawings have been addressed, and withdrawal of this objection is requested.

#### **Response to Objections to the Abstract and Specification**

(1) At page 3 of the Office Action, the Examiner objects to the Abstract of the Disclosure because the Examiner believes that "300-700 nm" at line 8 was intended to read "350-700 nm" as found in the specification.

Page 1 of the specification has been amended to read "300-700 nm" and thus is now consistent with the Abstract (also see original claim 1).

Withdrawal of this objection is requested.

(2) At page 3 of the Office Action, the Examiner objects to the specification because the Examiner believes that there are trademarks that are either not capitalized or not accompanied by generic terminology (such as PROCHECK on page 12).

It is not clear exactly what the Examiner is referring to since PROCHECK is already capitalized in the specification, and the generic terminology is evident in view the description. Further, it is not clear what other trademarks the Examiner finds objectionable. While one trademark has been located, and now capitalized, on page 22, the Examiner is requested to be more specific. Otherwise, it is simply not clear what is being required or requested.

Withdrawal of this objection is respectfully requested.

(3) At page 3 of the Office Action, the Examiner objects to the specification because page 1 does not include the claim for priority to Australia PP 8463.

The Examiner is requested to note that there is no requirement to include a claim to foreign priority on the first page of the specification, as 37 CFR §1.78 refers only to prior filed U.S. and international applications.

Nevertheless, Applicants have made the amendment requested. Withdrawal of this objection is requested.

(4) At page 3 of the Office Action, the Examiner objects to the title as not being descriptive of the invention. The Examiner suggests the Title: "Nucleic Acid Encoding Pigment Protein From Coral Tissue."

The Examiner's suggestion has been adopted. Withdrawal of this objection is requested.

(5) At page 4 of the Office Action, the Examiner objects to the phrase "...vectors f the invention..." at line 36 of page 4.

The clerical error has been corrected. Withdrawal of the objection is requested.

(6) At page 4 of the Office Action, the Examiner objects to the parenthetical “(231 amino acids and 235 amino acids)” at page 22, lines 18-19, because a space is missing. The space has been added. Withdrawal of the objection is requested.

#### **Response to Written Description Rejections**

At page 4 of the Office Action, the Examiner rejects claims 1-10 and 17-26 under 35 USC §112, first paragraph, as not complying with the written description requirement.

(1) With regard to claims 1-6, the Examiner contends that the claims must describe the claimed polynucleotides in terms of nucleotide sequence, and not solely by activity of the encoded protein. Further, the Examiner seems to assert that an amino acid sequence is not sufficient to describe the genus of encoding polynucleotides.

Claim 1 has been canceled and replaced with claim 33, which recites polynucleotides encoding the pigment proteins of SEQ ID NOS:5 and 6, as well as polynucleotides that are at least 80% identical, or those that hybridize under high stringency conditions to the complementary strand thereof.

As stated in the MPEP §2163, a claim drawn to a genus satisfies the written description requirement by description of, for example, a representative number of species and/or relevant identifying characteristics. Indeed the present specification does just that. The Examiner is kindly requested to consider the following:

- (i) Table I discloses an N-terminal amino acid sequence of several pigment proteins from coral tissue, and from several species, sufficient to show possession and to describe an identifying characteristic (see Table I).

(ii) The specification discloses nucleotide sequences of SEQ ID NOS:5 and 6, as well as amino acid sequences of SEQ ID NOS:3 and 4, showing possession of the same.

(iii) The specification discloses a molecular model of a pigment protein from coral tissue at pages 14-15, Table 4 and Fig. 8.

(iv) Table 2 shows an alignment of SEQ ID NO:4 with GFP (green fluorescent protein) and a GFP-like protein from *Discosoma* sp., thus showing conserved motifs such as the chromatophore region comprising “QYP” in SEQ ID NO:4.

(v) Table 5 lists ten species of coral from which a pigment protein was isolated, the corresponding color, as well as the excitation and emission peaks of the pigment protein.

(vi) Other relevant identifying characteristics of pigment proteins from coral tissue are described such as: size, polymeric state, thermostability, and pI.

Additionally, the Examiner is requested to note the recent Federal Circuit decision of *In re Wallach*, 378 F.3d 1330 (Fed Cir. 2004), which states that amino acid sequences can demonstrate possession of the encoding polynucleotides.

Thus, in view of the wealth of information provided by the present specification and the amendments to the claims, it is believed that the invention defined by the present claims is adequately described in the specification.

(2) With regard to claims 6-10, the Examiner contends that the language “corresponding to” and “substantially corresponding to” both embrace variations. The

Examiner believes that these minor variations are not sufficiently described in the specification.

While it is believed that the term “corresponding to” does not embrace variants as the Examiner contends, the terms “corresponding to” and “substantially corresponding to” are not used in the present claims.

(3) With regard to claims 7-9, the Examiner contends that the specification does not disclose an adequate number of species to sufficiently describe the genus of polynucleotides that have 80%, 90%, or 95% identity to SEQ ID NOS. 5 or 6.

This rejection is respectfully traversed. The Examiner is requested to consider the comments above with regard to claims 1-6.

(4) With regard to claims 19-22, the Examiner believes that the limitation “optionally recovering the expressed protein” violates the written description requirement because it “is not demonstrative of possession of the claimed invention.”

While it is not clear why the term “optionally recovering the expressed protein” in a method claim would not comply with the written description requirement, or what sort of “possession” the Examiner would like to see, nevertheless, the term “optionally” does not appear in claim 41, corresponding to claim 19, which has been canceled.

(5) With regard to claims 22-26, the Examiner contends that these claims violate the written description requirement because they do not recite hybridization conditions, and the specification does not describe the hybridization conditions that define the phrase “hybridizing selectively.”

Independent claim 33 recites “high stringency conditions” which is explicitly defined in the specification at page 6.

Withdrawal of the written description rejections is respectfully requested.

**Response to Claim Rejections Under 35 USC §112, First Paragraph, Enablement**

At page 8 of the Office Action, the Examiner rejects claims 1-10 and 17-26 under 35 USC §112, first paragraph, as not being enabled by the specification. The Examiner contends that, while the specification is enabling for the polynucleotides set forth in SEQ ID NOS: 5 and 6, and polynucleotides encoding the amino acid sequences of SEQ ID NOS: 3 and 4, the specification does not reasonably provide enablement for all fragments, variants, probes, and primers encompassed by the claims.

It is believed, in view of the response to the written description rejection, that the enablement rejection is rendered moot. Specifically, the present claims do not recite probes, primers and fragments.

**Response to Claim Rejections Under 35 USC §112, Second Paragraph**

At page 15 of the Office Action, the Examiner rejects claims 1-2, 5-10 and 17-26 under 35 USC §112, second paragraph, as being indefinite for the following reasons.

(A) The Examiner contends that the limitation “PPCT capable of emitting fluorescence” renders claim 1 and dependent claims 2, 5-10, 17-26 indefinite, because the term “capable of” implies that there are times when the fluorescent activity does not occur.

This language has been deleted from the claims.

(B) The Examiner contends that the range of “300-700 nm” in claim 1 lacks antecedent basis because the specification discloses a range of “350-700 nm” at page 3, lines 10-15.

The specification has been amended, although it is noted that the description in the disclosure has nothing to do with antecedent basis of a claimed range.

(C) The Examiner contends that claims 7-9 lack antecedent basis as independent claim 1 is directed to a full length nucleotide sequence and does not recite 80% or 90% or 95% sequence identity.

While this is not an issue of antecedent basis, and in fact claims 7-9 properly refer to homologous polynucleotides, the homology language also appears in independent claim 33.

(D) The Examiner contends that the recitation of “optionally recovering the expressed protein” renders claim 19 and dependent claims 20-21 indefinite, because the claims are directed to a “process for producing a pigment protein.” The Examiner believes that if the protein is not recovered then the process does not meet the objective of the claim.

The Examiner is requested to note that a protein can certainly be produced without being purified, e.g. cellular expression. Nevertheless, claim 41 does not recite the “optionally” language.

(E) The Examiner contends that the limitation “hybridizes selectively” renders claim 22 and dependent claims 23-26 indefinite, because the phrase is not defined in the specification and it is unclear as to the degree of identity required for a nucleic acid probe or primer to “hybridize selectively” to the recited sequence.

The language, as recited in claim 33, has been amended to be consistent with the specification.

## **Conclusion**

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the

Amendment under 37 C.F.R. § 1.111  
USSN 09/890,463

Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

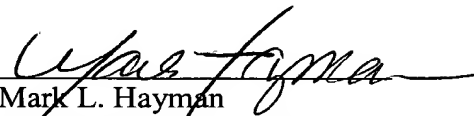
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**23373**

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